Creating Axes

Explains how to create axes, and what is important to know about them.
Axes are important in CDAT because they add information about the variable.
A variable is basically an array with a lot of information associated with itself.
Axes are very important as they describe the array's dimensions

There's basically 4 important things on an axes

its **values**
its name or **id**
its **bounds**
its **units**

Let's say in this example that we a dataset representing the amount of rain in a day.
Also we'll say that the data are only collected if it actually rained

Here are the mini dataset will be using

Date −−−− Value
Jan 3Â Â Â Â Â Â Â 2 cm
Jan 5Â Â Â Â Â Â 15 cm
Jan 17Â Â Â Â Â 3.5 cm
Jan 23Â Â Â Â Â 4 cm

```
# Let's import the necessary modules
import cdms,MV

# Let's create the variable first
rain = MV.array([2.,15.,3.5,4.])
rain.id    = 'pr'
rain.units = 'cm'

# Now we need to create the associated "time" axis, let's use days' since 2005 as units
# First the axis itslef with its values
# values can be passed as a list, an array or a variable
time = cdms.createAxis([2,4,16,22]) # Remember Jan 1st, is 0 days since Jan 1st!
# Now let's name it
time.id = 'time'
# Let's give it some units
time.units = 'days since 2005-1-1'

# Another very important attribute are the bounds, indeed we need to know the "extend" of each va
# Here we will assume that the data span a full day everytime, but they could as well spend a few
# of these days only

bounds = MV.array ([[2.,3.],
                    [4.,5.],
                    [16.,17.],
                    [22.,23.] ])

time.setBounds(bounds)

# Now we have to link the variable dimension to this axes object

rain.setAxis(0,time)
```

```
rain.info()

*** Description of Slab pr ***
id: pr
shape: (4,)
filename:
missing_value: None
comments:
grid_name: N/A
grid_type: N/A
time_statistic:
long_name:
units:
No grid present.
** Dimension 1 **
   id: time
   Designated a time axis.
   units:  days since 2005-1-1
   Length: 4
   First:  2
   Last:   22
   Python id:  -0x486cf214
*** End of description for pr ***
```